

REMARKS

Claims 1-20 are pending in this application. By this Amendment, the Specification and claims 1 and 4 are amended. Claims 6-20 are added. Applicant concurrently files herewith a petition and fee for a one-month extension of time.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

With respect to the prior art rejections, claims 1, 2, 4, and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hupfer et al. (U.S. Patent No. 5,044,787). Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hupfer in view of Richie et al. (U.S. Patent No. 2,729,520).

The rejection is respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The invention, as recited claim 1 for example, is directed to a double-split cage having a strip-shaped sheet which is curved into a semi-cylindrical shape and includes pockets for accommodating a row of rollers arranged in a circumferential direction. The strip-shaped sheet includes two arch portions separately arranged in an axial direction, pillar portions arranged in the circumferential direction for connecting the arch portions together and protrusions protruding in the circumferential direction by a first length from the pillar portions located at opposite distal ends in the circumferential direction, which are provided at opposite distal ends of arch portions, respectively. The strip sheet further includes chamfered portions having a second length in the circumferential direction formed at corners outside in the axial direction of the protrusions, respectively, wherein the second length of the chamfered portions is larger than the first length of the protrusions (Application at page 4, lines 2-24).

Conventional double-split cages as described in the Background of the present Application, are manufactured by cutting the strip-shaped metallic sheet off at the position of the pillar portion. By manufacturing the cage in this way the width of the pillar portions in

the circumferential direction located at opposite end portions of the strip-shaped metallic sheet in the circumferential direction is reduced after the completion of cutting. Therefore, the mechanical strength of the pillar portion deteriorates and the durability is deteriorated (Application at page 1, line 7-page 2, line 12).

Further, if cutting is conducted so that the strip-shaped sheet is cut off in the width in the circumferential direction of a pocket in the manufacturing process, the protrusions are formed at positions in the axial direction that often results in the protrusions becoming hooked together, thereby causing difficulties in correcting a positional shift of the two double-split cages so that they are appropriately opposed to each other (Application at page 2, line 14-page 3, line 23).

In contrast, an exemplary aspect of this invention may provide chamfered portions having a second length in the circumferential direction formed at corners outside in the axial direction of the protrusions, respectively, wherein the second length of the chamfered portions is larger than the first length of the protrusions (Application at page 8, line 15-page 9, line 15).

II. THE PRIOR ART REJECTIONS

A. The 35 U.S.C. § 103(a) Hupfer reference rejection

In rejecting claims 1, 2, 4 and 5 as being unpatentable over Hupfer, et al. (Hupfer) the Examiner alleges that Hupfer teaches or suggests each and every feature recited in the rejected claims. However, there are elements of the rejected claims that are neither disclosed nor suggested by Hupfer.

For example, Hupfer fails to disclose or suggest chamfered portions provided on outside corners of the protrusions that are located at opposite distal ends of the two arch portions. In other words, Hupfer only discloses chamfers cut on one set of protrusions. The other set of protrusions is square cut (Figs. 2-3 of Hupfer). By providing only one chamfered protrusion, the protrusions will likely continue to exhibit the known problem of hooking on one another.

Moreover, as admitted in the Office Action, Hupfer “does not disclose any dimensional relationship regarding the axial length of the chamfer compared to the length of the protrusion” (emphasis added). The Examiner alleges that such a feature would have been obvious because “applicant has not disclosed that having the length of the chamfer being

longer than the length of the protrusion solves any stated problem.” Applicant disagrees with the allegation.

Rather, Applicant has provided clear and specific reasons for the chamfer dimensions that resolve known problems in the art. For example, several known problems of conventional double-split cages are set forth in the Background of the Invention, including difficulties in correcting a positional shift of the two double-split cages so that they are appropriately opposed to each other (see pages 1-3 of the Specification of this application). It is further stated in the Specification that the subject matter of the claims solves the aforementioned problems (see page 4 of the Specification).

For example, in an exemplary aspect of the claimed invention illustrated in Fig. 3, the length L2 of the chamfered portion 10 is set to be longer than the protruding length L1 of the protrusions. By providing this relative relationship between the two lengths L1 and L2, it is possible to have a larger inclination angle 2. The larger the inclination angle 2 of the chamfered portion 10, the smaller the width of the faces opposed to each other in the circumferential direction. Therefore, correcting the positional shift becomes easy.

In contrast, the smaller the inclination angle 2, the more width of the faces are opposed to each other, making it more difficult to correct positional shift (see page 8, line 15- page 9, line 15 of the Specification). Accordingly, there is ample disclosure in the specification that the length of the chamfers solves a stated problem. Therefore, Hupfer does not render the claims obvious.

As Hupfer fails to disclose or suggest each and every feature recited in the rejected claims, withdrawal of the rejection is respectfully requested.

B. The 35 U.S.C. § 103(a) Hupfer and Richie et al. reference rejection

Claim 3 is allowable for its dependency on independent claim 1 for the reasons discussed above, as well as for the additional features recited therein. Moreover, as Richie fails to overcome the deficiencies of Hupfer, the combination of references fails to render claim 3 obvious.

For example, the combination of references fails to disclose or suggest protrusions protruding in the circumferential direction by a first length from the pillar portions located at opposite distal ends in the circumferential direction, which are provided at opposite distal

ends of the two arch portions, respectively and chamfered portions having a second length in the circumferential direction formed at corners outside in the axial direction of the protrusions, respectively, wherein the second length of the chamfered portions is larger than the first length of the protrusions.

Therefore, neither Hupfer nor Richie, whether considered alone or in combination, disclose or suggest the features recited in claim 3.

None of the applied references, whether considered alone or in combination, disclose or suggest the features recited in new claims 6-20.

III. Formal Matters

In the outstanding Office Action, the drawings are objected to because the specification makes reference to "Fig. 4D" which is not present in the filed drawings. The specification is amended in a manner believed to be fully responsive to the objection.

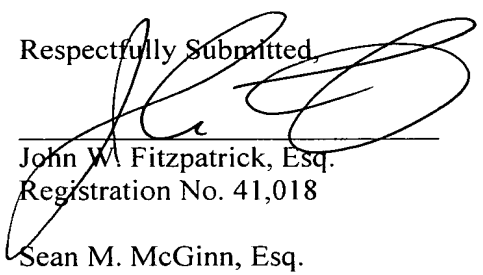
In view of the foregoing, Applicant submits that claims 1-20, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

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Respectfully Submitted,



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